

APPENDIX D. RESOURCES FOR ADDRESSING SEA-LEVEL RISE IN LOCAL COASTAL PROGRAMS

This section contains lists of guidebooks, guidance documents, and state and local efforts underway to prepare for sea-level rise, including tables on:

- Adaptation Planning and Vulnerability Assessment Guidebooks – [Table 22](#)
- Examples of Sea-Level Rise Vulnerability Assessments in California – [Table 23](#)
- California State Government Resources – [Table 24](#)
- Sea-Level Rise Data and Resource Clearinghouses – [Table 25](#)
- Resources for Assessing Adaptation Measures – [Table 26](#)
- California Climate Adaptation Plans that Address Sea-Level Rise – [Table 27](#)

Table 22. Resources for Adaptation Planning and Vulnerability Assessments

Adaptation Planning Guidebooks	Description	Source
Scanning the Conservation Horizon (Grannis, 2011)	Designed to assist conservation and resource professionals to better plan, execute, and interpret climate change vulnerability assessments.	http://www.georgetownclimate.org/resources/adaptation-tool-kit-sea-level-rise-and-coastal-land-use
Adapting to Sea Level Rise: A Guide for California's Coastal Communities (Russell and Griggs, 2012)	Intended to assist California's coastal managers and community planners in developing adaptation plans for sea-level rise that are suited to their local conditions and communities.	http://calost.org/pdf/announcements/Adapting%20to%20Sea%20Level%20Rise_N%20Russell_G%20Griggs_2012.pdf
California Climate Adaptation Planning Guide (EMA and CNRA, 2012)	Provides a decision-making framework intended for use by local and regional stakeholders to aid in the interpretation of climate science and to develop a systematic rationale for reducing risks caused, or exacerbated, by climate change.	http://resources.ca.gov/climate_adaptation/local_government/adaptation_policy_guide.html
Preparing for Climate Change: A Guidebook for Regional and State Governments (ICLEI, 2007)	Assists decision-makers in a local, regional, or state government prepare for climate change by recommending a detailed, easy-to-understand process for climate change preparedness based on familiar resources and tools.	http://www.icleiusa.org/action-center/planning/adaptation-guidebook/view?searchterm

Table 23. Examples of Sea-Level Rise Vulnerability Assessments in California

Climate Vulnerability Studies	Description	Source
Santa Barbara Sea-Level Rise Vulnerability Study (Griggs and Russell, 2012)	Assesses the vulnerability of the City of Santa Barbara to future sea-level rise and related coastal hazards (by 2050 and 2100) based upon past events, shoreline topography, and exposure to sea-level rise and wave attack. It also evaluates the likely impacts of coastal hazards to specific areas of the City, analyzes their risks and the City's ability to respond, and recommends potential adaptation responses.	http://www.energy.ca.gov/2012publications/CEC-500-2012-039/CEC-500-2012-039.pdf
City of Santa Cruz Climate Change Vulnerability Assessment (Griggs and Haddad, 2011)	Delineates and evaluates the likely impacts of future climate change on the city of Santa Cruz, analyzes the risks that these hazards pose for the city, and then recommends potential adaptation responses to reduce the risk and exposure from these hazards in the future.	http://seymourcenter.ucsc.edu/OOB/SCClimateChangeVulnerabilityAssessment.pdf
Developing Climate Adaptation Strategies for San Luis Obispo County: Preliminary Vulnerability Assessment for Social Systems (Moser, 2012)	Describes the likely impacts of climate change on the resources and social systems of San Luis Obispo County, and assesses key areas of vulnerability. Sea-level rise is identified as a major source of risk to fishing, coastal tourism, coastal development, and infrastructure.	http://www.energy.ca.gov/2012publications/CEC-500-2012-054/CEC-500-2012-054.pdf
Monterey Bay Sea Level Rise Vulnerability Study (Monterey Bay National Marine Sanctuary and PWA ESA; In progress)	Will assess potential future impacts from sea-level rise for the Monterey Bay region. The project will estimate the extent of future coastal erosion in Monterey Bay due to accelerated sea-level rise and evaluate areas subjected to coastal flooding by inundation from wave action and/or storm surges. The project will update and refine existing Monterey Bay coastal hazard zones maps (erosion and flooding).	Project scope and grant details: http://scc.ca.gov/webmaster/ftp/pdf/sccbb/2012/1201/20120119Board03D_Monterey_Bay_Sea_Level_Rise.pdf

Table 24. California State Government Resources

State of California Resources	Description	Source
California Climate Change Center's 3rd Assessment	Explores local and statewide vulnerabilities to climate change, highlighting opportunities for taking concrete actions to reduce climate-change impacts	http://www.climatechange.ca.gov/adaptation/third_assessment/
California State Sea-Level Rise Guidance Document	Provides guidance for incorporating sea-level rise projections into planning and decision making for projects in California. Updated to include NRC projections March 2013.	http://www.opc.ca.gov/webmaster/ftp/pdf/docs/2013_SLR_Guidance_Update_FINAL1.pdf
California Climate Adaptation Planning Guide	Provides a decision-making framework intended for use by local and regional stakeholders to aid in the interpretation of climate science and to develop a systematic rationale for reducing risks caused, or exacerbated, by climate change (2012).	http://resources.ca.gov/climate_adaptation/local_government/adaptation_policy_guide.html
2009 California Climate Adaptation Strategy	Summarizes climate change impacts and recommends adaptation strategies across seven sectors: Public Health, Biodiversity and Habitat, Oceans and Coastal Resources, Water, Agriculture, Forestry, and Transportation and Energy. 2012 update should be available by Jan 2013.	http://www.climatechange.ca.gov/adaptation/strategy/index.html

Table 25. Sea-level rise Data and Resource Clearinghouses

Data and resource clearinghouses	Description	Source
California Climate Commons	Offers a point of access to climate change data and related resources, information about the science that produced it, and the opportunity to communicate with others about applying climate change science to conservation in California.	http://climate.calcommons.org/
Climate Adaptation Knowledge Exchange (CAKE)	Provides an online library of climate adaptation case studies and resources, plus ways to connect with an online climate adaptation community/ network.	http://www.cakex.org/
Ecosystem Based Management Tools Network Database	Provides a searchable database of tools available for climate adaptation, conservation planning, sea-level rise impact assessment, etc.	http://www.ebmtoolsdatabase.org/resource/climate-change-vulnerability-assessment-and-adaptation-tools

Table 26. Resources for Assessing Adaptation Measures

Adaptation Strategies	Description	Source
General		
Georgetown Climate Center's Climate Adaptation Toolkit – Sea-Level Rise and Coastal Land Use	Explores 18 different land-use tools that can be used to preemptively respond to the threats posed by sea-level rise to both public and private coastal development and infrastructure, and strives to assist governments in determining which tools to employ to meet their unique socio-economic and political contexts.	http://www.georgetownclimate.org/resources/adaptation-tool-kit-sea-level-rise-and-coastal-land-use
Strategies for Erosion-Related Impacts		
Evaluation of Erosion Mitigation Alternatives for Southern Monterey Bay	Provides a technical evaluation of various erosion mitigation measures, conducts a cost benefit analysis of some of the more promising measures, and includes recommendations for addressing coastal erosion in Southern Monterey Bay. The report is intended to be relevant for other areas of California as well.	http://montereybay.noaa.gov/new/2012/erosion.pdf
Rolling Easements		
Rolling Easements- A Primer (Titus 2011)	Examines more than a dozen different legal approaches to rolling easements. It differentiates opportunities for legislatures, regulators, land trusts, developers, and individual landowners. Considers different shoreline environments (e.g. wetlands, barrier islands) and different objectives (e.g. public access, wetland migration)	http://papers.risingsea.net/rolling-easements.html
No Day at the Beach: Sea Level Rise, Ecosystem Loss, and Public Access Along the California Coast (Caldwell and Segall 2007)	Provides a description of sea-level rise impacts to ecosystems and public access, strategies to address these impacts, and case study examples of rolling easement strategies for the California coast.	http://www.boalt.org/elq/documents/elq34-2-09-caldwell-2007-0910.pdf

Natural Resources		
PRBO Climate Smart Conservation	Lists science-based, climate-smart conservation planning and management tools and methods, including restoration projects designed for climate change and extremes.	http://www.prbo.org/cms/650
US Forest Service System for Assessing Vulnerability of Species- Climate Change Tool	Quantifies the relative impact of expected climate change effects for terrestrial vertebrate species.	http://www.fs.fed.us/rm/grassland-shrubland-desert/products/species-vulnerability/savs-climate-change-tool/

Table 27. California Climate Adaptation Plans that Address Sea-Level Rise

Example Climate Adaptation Plans	Description	Source
Adapting to Rising Tides (ART) Project	The ART project is a collaborative planning effort led by the San Francisco Bay Conservation and Development Commission to help SF Bay Area communities adapt to rising sea levels. The project has started with a vulnerability assessment for a portion of the Alameda County shoreline.	http://www.adaptingtorisingtides.org/ Vulnerability and risk assessment report: http://www.adaptingtorisingtides.org/vulnerability-and-risk-assessment-report/
Santa Cruz Climate Adaptation Plan	An update to the 2007 Hazard Mitigation Plan, the adaptation plan includes strategies and best available science for integrating climate change impacts into City of Santa Cruz operations.	Complete plan is available: http://www.cityofsantacruz.com/Modules/ShowDocument.aspx?documentid=23643
San Diego Bay Sea Level Rise Adaptation Strategy	The strategy provides measures to evaluate and manage risks from sea-level rise and other climate change impacts, and includes a vulnerability assessment of community assets at risk, and broad recommendations to increase resilience of these assets.	http://www.icleiusa.org/climate_and_energy/Climate_Adaptation_Guidance/san-diego-bay-sea-level-rise-adaptation-strategy-1/san-diego-bay-sea-level-rise-adaptation-strategy